

REMARKS

Claims 1-33 are pending in the present application. Reconsideration of the claims is respectfully requested.

I. 35 U.S.C. § 102, Anticipation, and § 103, Obviousness

The examiner has rejected claims 1-6, 8-17, and 19-22 under 35 U.S.C. § 102 as being anticipated by Kikinis et al., USPN 5964848. This rejection is respectfully traversed.

As per claims 1 and 12, Kikinis teaches the invention as claimed including method and apparatus for managing copies of virtual volume data comprises means for receiving an access request directed to an original volume is taught EIDE adapter for receiving access request directed to primary device 519 (e.g. see figure 5, column 4, lines 60 et seq., means for mapping the access request to a secondary virtual volume is taught as the IDE controller firmware for allowing the mapping of the access requests to the secondary devices (e.g. see column 4, lines 67 bridging column 5, line 2; and means for performing the access request on one or more physical volumes associated with the secondary virtual volume is taught as CPU 511 for performing access request one the secondary volume after the firmware translation (e.g. see column 5, lines 3-5).

Claim 1 is reproduced for purposes of discussion.

1. A method of managing copies of virtual volume data, comprising:
receiving an access request directed to an original virtual volume;
mapping the access request to a secondary virtual volume; and
performing the access request on one or more physical volumes associated with the secondary virtual volume.

1. The cited reference does not teach the claimed limitations of, "receiving an access request directed to an original virtual volume; mapping the access request to a secondary virtual volume," as claimed in claim 1.

Examiner rejects claims 1 and 12 citing in part Kikinis at columns 4 and 5. However, Applicant respectfully submits that Kikinis is not directed to mapping an access request from an original volume to a secondary virtual volume, and does not teach or suggest these claimed limitations.

Kikinis teaches a system and method for translating the protocol or data structures of peripheral devices that do not conform to ST506 specification. In short, it is directed to making non-compatible devices compatible for storage and access. This differs from the teaching and claims of the present application.

Kikinis states at col. 4, line 66-col. 5, line 5:

In this embodiment of the invention, the IDE controller firmware is enhanced to allow multiple secondary devices to be individually selected as the active device. In the preferred mode for this embodiment, one primary device and eight secondary devices can be connected to the EIDE adapter and individually addressed by the CPU.

By "active device," the Kikinis reference refers to an "active device" as the one being accessed by the CPU. For example, line 46 of column 5 begins, "Subsequent Unit Select commands may be issued to switch the active device among the secondary devices. Issuance of the conventional IDE command to select the primary device will force the currently active secondary device into the idle state in conformance with standard IDE practice."

This passage is reproduced to show that Kikinis is not receiving an access request to an original volume and mapping that request to another, virtual volume. No mapping of access requests is taught or suggested in Kikinis. Instead, Kikinis is concerned with translating the protocols and data structures of peripheral devices so the CPU of a host system can access those devices which are not otherwise compatible with the host system. There appears to be no redundancy of data in the Kikinis teaching, meaning that

if in Kikinis a request for data on the primary device 519 were mapped to one of the peripherals, the sought-after data would not be found on the peripheral device.

Kikinis further describes its teaching at col. 5, lines 17-21:

In the EIDE according to the present invention, the secondary devices can be a mix of disk drives, CD-ROM drives, and cartridge tape drives, with each having an EIDE microcontroller controller and firmware to translate between the EIDE protocol and the protocol of the particular device.

[Emphasis added.]

Thus, Kikinis does not teach or suggest the limitations of claim 1, including the limitations of, "mapping the access request to a secondary virtual volume; and performing the access request on one or more physical volumes associated with the secondary virtual volume." Applicant finds only peripheral devices in Kikinis which differ in protocol, with no description of seeking data on one device and finding it on another, whether through mapping or otherwise. Further, the idea of mapping access requests does not appear to be taught or suggested in Kikinis. Hence, Applicant respectfully submits that Kikinis does not teach or suggest the limitations of claim 1.

Because Examiner uses the rationale of the rejection of claim 1 to reject claims 12 and 23, claims 12 and 23 are also believed distinguished from the cited reference.

Thus, all independent claims are believed distinguished from the cited reference. Further, several of the dependent claims are also believed allowable on their own merits. For example, claim 7 claims:

7. The method of claim 6, wherein the access request is redirected in response to a fault in a physical volume of the first secondary virtual volume.

In rejecting claim 7, Examiner states in part,

It should be noted that Kikinis in fact discloses redirecting access request to the secondary memory devices by issuing the IDE command to select the secondary device when the physical volume of the first secondary virtual volume is in idle

state (e.g., see column 5, lines 33 et seq.). Accordingly, it would have been obvious to one of ordinary skill in the art at the time the current invention was made to readily recognize (a) the idle state of the primary device is read to include the fault state as being claimed, and (b) by redirecting access request to the storage media(s) when a failure or fault in the primary device, it would ensure the continuous data operational cycle without introducing any additional delay or data corruption in the system....

Applicant respectfully disagrees with this characterization of Kikinis. the cited section of Kikinis, e.g., col. 5, lines 30 et seq., state:

At Power-on or Reset after completing the self-test routine in the microcontroller firmware the primary IDE device enters the active state and all secondary devices enter the idle state. When the CPU issues the IDE command to select the secondary device, the primary device enters the idle state according to standard IDE protocol. In a departure from standard IDE protocol, all EIDE secondary device controllers remain in the idle state. Next the IDE command, called the invention Unit Select, is a command not defined in the conventional IDE protocol and causes the EIDE controllers to compare the transmitted Unit Select data value with the device unit number. The device having a matching unit number enters the active state. All other secondary controllers remain in idle, or inactive state. The activated device will thereafter respond to IDE commands in accordance with standard protocols.

Thus, the passage cited by Examiner does not teach "redirecting access request to the secondary memory devices" as Examiner characterizes Kikinis. The passage states that one device (the primary IDE device 319) begins as active, and if the CPU requests access to one of the idle devices (*i.e.*, one of the peripheral storage devices) (*See above citation: "When the CPU issues the IDE command to select the secondary device..."* emphasis added), the active device is idled while the requested device is activated. This is not a redirecting of an access request. The access request, as Kikinis states, was to the secondary, idle device. This secondary, idle device is activated by the artifice of Kikinis, allowing it to be accessed.

Hence, Applicant respectfully submits that claim 7 is distinguished from the cited reference. Further, at least by virtue of their dependence on allowable independent claims, all other dependent claims are believed allowable over the cited reference. Applicant therefore respectfully requests favorable reconsideration of the claims.

2. The cited reference does not teach or suggest the claimed limitations in the context of virtual volumes.

In Kikinis, the peripheral devices accessed by the CPU appear to be hardware devices, and are not characterized by Kikinis as virtual volumes. For example, Kikinis discusses these physical storage devices as "a plurality of secondary devices 525, 531...537, each equipped with a microcontroller (527, 529, 523) according to the present invention. Boot disk 519 has a controller 521 configured to communicate with adapter 515 as well."

This and other sections do not appear to characterize the peripheral devices as virtual volumes. Hence, it is respectfully submitted that Kikinis does not teach the claimed limitations in the context of virtual volumes, as claimed.

Further, it is respectfully submitted that Kikinis does not teach or suggest modifications that would reach virtual volumes, even if the other claim limitations were present in Kikinis (which Applicants do not stipulate). Hence, it is respectfully submitted that all claims are distinguished from the cited reference.

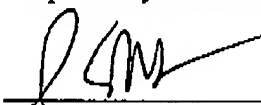
II. Conclusion

It is respectfully urged that the subject application is patentable over Kikinis and is now in condition for allowance.

The examiner is invited to call the undersigned at the below-listed telephone number if in the opinion of the examiner such a telephone conference would expedite or aid the prosecution and examination of this application.

DATE: 5.26.04

Respectfully submitted,



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